



Ordinary Portland Cement (OPC) Technical Data Sheet

SECTION 1 – PRODUCT IDENTIFICATION

Product Name: Ordinary Portland Cement (OPC)

Manufacturer: Gulf Cement Company P.S.C

Manufacturing Location: Ras Al Khaimah, United Arab Emirates

Product Description:

Ordinary Portland Cement (OPC) is a general-purpose hydraulic cement manufactured by Gulf Cement Company in accordance with international standards ASTM and BS EN. The cement is produced using high-quality raw materials and state-of-the-art manufacturing technology to ensure consistent performance and reliability across a wide range of construction applications.

SECTION 2 – INTENDED USES

OPC is intended for use as a primary binding material in concrete and mortar applications within the construction industry. It is widely used in both structural and non-structural works, including residential, commercial, industrial, and infrastructure projects.

SECTION 3 – PRODUCT COMPOSITION (GENERAL)

Ordinary Portland Cement is a finely ground inorganic material produced from clinker and gypsum. The cement primarily contains calcium silicates and other mineral phases that react with water to form hardened cementitious products. OPC is manufactured under controlled conditions to meet applicable international specifications.

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Revision date:
01/12/2025



SECTION 4 – PRODUCT CHARACTERISTICS & PERFORMANCE

OPC supplied by GCC is characterized by:

- Consistent fineness and particle size distribution
- Reliable strength development
- Stable setting characteristics
- Good compatibility with aggregates and admixtures

The cement reacts with water to form hardened cementitious compounds, providing strength and durability to concrete structures when properly designed, mixed, and cured.

SECTION 5 – SPECIAL ATTRIBUTES

GCC OPC features an engineered particle size distribution that provides:

- Improved workability
- Enhanced strength development
- Increased durability

The optimized particle range enables better dispersion, faster cement reactions, and denser packing of the cement matrix, making OPC suitable for a wide range of construction applications.



SECTION 6 – APPLICATIONS

Ordinary Portland Cement is suitable for use in:

- Foundation concrete
- Beams and columns
- Wall and ceiling plaster
- Slab casting
- Bricklaying and masonry works
- Mass concreting
- Interlock and paving block production
- Road construction
- General construction works

SECTION 7 – QUALITY MANAGEMENT & ASSURANCE

Gulf Cement Company operates certified management systems and is certified to:

- ISO 9001:2015 — Quality Management
- ISO 14001:2015 — Environmental Management
- ISO 45001:2018 — Occupational Health & Safety
- API Spec Q1 — 10th Edition (for Class G cement)

GCC maintains a modern laboratory infrastructure to ensure product consistency and compliance with ASTM and BS EN and other International standards.



SECTION 8 – TESTING & LABORATORY FACILITIES

X-Ray Testing Laboratory

GCC uses online X-ray analyzers to monitor product quality at all stages of production, ensuring compliance with final product specifications and supporting stable plant operation through efficient process control.

Physical Testing Laboratory

Cement is tested against ASTM and BS EN standards using:

- Blaine specific surface area
- Laser particle size analysis
- Flow tests
- Setting time tests
- Jolting machines
- Compressive strength testing
- Heat of hydration tests
- Soundness tests (Le Chatelier and Autoclave)



SECTION 9 – PACKAGING & SUPPLY

OPC is supplied in the following forms:

- Bulk supply
- 50 kg standard bags
- Jumbo bags: 1.0 Ton / 1.5 Ton (upon customer requirement)

SECTION 10 – PROJECT REFERENCES

GCC OPC has been used in major landmark projects in the UAE and internationally, including:

- Burj Khalifa
- Dubai Metro
- Dubai Airport Terminal 3

**Test Certificate****ASTM C150 – TYPE I CEMENT****CHEMICAL COMPOSITION**

Parameter	Unit	Requirements	Typical Results
Loss on Ignition	%	Max. 3.0	1.42
Insoluble Residue	%	Max. 1.5	0.23
Silicon Dioxide (SiO ₂)	%	—	20.37
Aluminium Oxide (Al ₂ O ₃)	%	—	4.60
Ferric Oxide (Fe ₂ O ₃)	%	—	4.17
Calcium Oxide (CaO)	%	—	64.42
Magnesium Oxide (MgO)	%	Max. 6.0	1.34
Sulphur Trioxide (SO ₃)	%	—	2.18
3CaO·Al ₂ O ₃ ≤ 8%	%	Max. 3.0	—
3CaO·Al ₂ O ₃ > 8%	%	Max. 3.5	—
Tricalcium Silicate (C ₃ S)	%	—	64.3
Dicalcium Silicate (C ₂ S)	%	—	9.9
Tricalcium Aluminate (C ₃ A)	%	—	5.1
Alkalies (Na ₂ O + 0.658K ₂ O)	%	—	0.701
Chlorides	%	—	0.023



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PHYSICAL PROPERTIES

Parameter	Unit	Requirements	Typical Results
Specific Surface (Air Permeability)	m ² /kg	Min. 260	322
Autoclave Expansion	%	Max. 0.80	0.065
Time of Setting – Initial	Minutes	Min. 45	180
Time of Setting – Final	Minutes	Max. 375	225
Air Content of Mortar	Vol.%	Max. 12	7.5
Compressive Strength – 3 Days	psi	Min. 1740	3190
Compressive Strength – 7 Days	psi	Min. 2760	4153
Compressive Strength – 28 Days	psi	—	5447
Heat of Hydration at 7 Days	kJ/kg	—	267



Test Certificate

PORTLAND CEMENT CEM I 42.5 N

Standard: BS EN 197-1:2011

CHEMICAL COMPOSITION

Parameter	Unit	Requirements	Typical Results
Loss on Ignition	%	≤ 5.0	1.42
Insoluble Residue	%	≤ 5.0	0.23
Silicon Dioxide (SiO ₂)	%	—	20.37
Aluminium Oxide (Al ₂ O ₃)	%	—	4.60
Ferric Oxide (Fe ₂ O ₃)	%	—	4.17
Calcium Oxide (CaO)	%	—	64.42
Magnesium Oxide (MgO)	%	—	1.34
Sulphur Trioxide (SO ₃)	%	≤ 3.5	2.18
Tricalcium Silicate (C ₃ S)	%	—	64.3
Dicalcium Silicate (C ₂ S)	%	—	9.9
Tricalcium Aluminate (C ₃ A)	%	—	5.1
Alkalies (Na ₂ O + 0.658K ₂ O)	%	—	0.701
Chlorides	%	≤ 0.10	0.023



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PHYSICAL PROPERTIES

Parameter	Unit	Requirements	Typical Results
Specific Surface (Air Permeability)	cm ² /g	—	3220
Soundness – Le Chatelier Expansion	mm	≤ 10	0.57
Time of Setting – Initial	Minutes	≥ 60	195
Time of Setting – Final	Minutes	—	235
Compressive Strength – 2 Days	N/mm ²	≥ 10	25.2
Compressive Strength – 7 Days	N/mm ²	—	37.7
Compressive Strength – 28 Days	N/mm ²	≥ 42.5 & ≤ 62.5	50.7

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LASER PARTICLE SIZE ANALYSIS

